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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/621,637 | 07/17/2003 | Yonsheng Shen | 011361.00065 | 2587 |

22910 7590 05/30/2008
BANNER & WITCOFF, LTD.
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| EXAMINER | |
|---|---|
| OLSEN, KAJ K | |
| **ART UNIT** | **PAPER NUMBER** |
| 1795 | |

| MAIL DATE | DELIVERY MODE |
|---|---|
| 05/30/2008 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/621,637; 90/006,209 | SHEN ET AL. | |
| | Examiner | Art Unit | |
| | KAJ K. OLSEN | 1795 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-67 and 70-127* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *35-51* is/are allowed.

6)☒ Claim(s) *1-12, 18, 29-34, 52-64, 66, 67, 70-127* is/are rejected.

7)☒ Claim(s) *13-17,19-28,and 65* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *1/13/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Res Judicata*

1. Claims 1, 2, 9-12, 29-34, 52, 54, and 61-65 of this reissue are identical to the claims 1, 2, 9-12, 29-34, 52, 54, and 61-65 presented to the Board of Appeals in Reexamination 90/006,209. The rejection of these claims was affirmed in the Board decision of 3/28/2007. Hence, these claims 1, 2, 9-12, 29-34, 52, 54, and 61-65 are rejected on the grounds of *Res Judicata* and the applicant is not entitled to further adjudication of the issues concerning these claims.

### *Specification*

2. The specification is objected to because it does not incorporate the changes made to the disclosure by the Certificate of Correction. Said changes to the specification should be made without underlining or brackets. See MPEP 1411.01.

### *Reissue Applications*

3. Claims 66, 67, and 70-127 are rejected under 35 U.S.C. 251 as being broadened in a reissue application filed outside the two year statutory period. In independent claims 66, 67, 73, 76, and 77, the preamble of the claims has been broadened from "for quantitative measurement" in the originally filed claims to "for measurement". In independent claims 73 and 77, applicant has broadened the claim by omitting a whole limitation concerning that the sensing electrode reacts with the gas to produce a change in electrical characteristic between the sensing and counter electrodes. For claim 73, this previous limitation is now presented in dependent claim

75. In independent claims 78, 112, and 126, the limitation beginning "a first protonic conductive electrolyte," the "sensing electrode reacting" has been broadened to "the sensing electrode *being capable of* reacting" (emphasis added). In independent claims 112 and 126, the limitation beginning "whereby, in a positive ambient concentration", the previous "means detects changes" has been broadened to "means *is capable of* detecting changes" (emphasis added). A claim is broader in scope than the original claims if it contains within its scope any conceivable product or process which would not have infringed the original patent. A claim is broadened if it is broader in any one respect even though it may be narrower in other respects.

4. Claims 66, 67, and 70-127 are rejected under 35 U.S.C. 251 as being improperly broadened in a reissue application made and sworn to by the assignee and not the patentee. A claim is broader in scope than the original claims if it contains within its scope any conceivable product or process which would have infringed the original patent. A claim is broadened if it is broader in any one respect even though it may be narrower in other respects. See the discussion above the instances of broadening in new claims 66, 67, and 70-127.

5. This application is objected to under 37 CFR 1.172(a) as the assignee has not established its ownership interest in the patent for which reissue is being requested. An assignee must establish its ownership interest in order to support the consent to a reissue application required by 37 CFR 1.172(a). The assignee's ownership interest is established by:

(a) filing in the reissue application evidence of a chain of title from the original owner to the assignee, or

(b) specifying in the record of the reissue application where such evidence is recorded in the Office (e.g., reel and frame number, etc.).

The submission with respect to (a) and (b) to establish ownership must be signed by a party authorized to act on behalf of the assignee. See MPEP § 1410.01. In particular, applicant has not provided a statement affirming that the documentary evidence of the chain of title from the original owners to the assignee was, or concurrently is, submitted from recordation pursuant to 37 CFR 3.11 as required by MPEP § 1410.01. Alternatively, applicant could provide the reel and frame number where the documentary evidence is recorded in the office.

An appropriate paper satisfying the requirements of 37 CFR 3.73 must be submitted in reply to this Office action.

### *Claim Rejections - 35 USC § 112*

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 6-8, 18 58-60, 83-85, 95 and 118-120 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

8. Claims 6, 18, 58, 83, 95 and 118 are drawn to one of the sensing or counter electrodes being comprised of a film having a thickness in the range of 50-10,000 Å. It does not appear that applicant has support for both this limitation and the limitation that one of the sensing or counter electrodes be comprised of a mixed conductive material. In particular, these limitations of claim

6, 18, 58, 83, 95, and 118 are cited when discussing the applicant's embodiment of an electrode comprising only a metal film. See fig. 6; col. 9, ll. 14-40 and col. 12, ll. 31-40 of the specification. However, fig. 6 does not read on the any of the independent claims 1, 52, 78, and 112 because each of these claims require a combination of proton and electron conductive materials, like disclosed in fig. 7. The specification makes it very clear that the embodiment of fig. 6 differs from fig. 7 in the absence of any proton conductive material (col. 13, ll. 25-27). There is nothing in the originally filed disclosure to suggest that these dimensions of claims 6, 18, 58, 83, 95, and 118 were also to be utilized with the proton conductive material containing electrodes of fig. 7. Furthermore, col. 6, ll. 48-50 states that one could take one of two different approaches to reducing the interface resistance, either introducing mixed proton-electronic conductor "or alternatively" use a thin film electron conductor electrode. Hence, the thin films of claims original claims 6, 18, and 58 were an *alternative* to the compositions of claims 13, 22, and 52 and were not complementary to each other. In fact, the only dimension ever given for an electrode like those for fig. 7 reads well away from the dimensions defined by claims 6, 18, 58, 83, 95, and 118. See col. 8, ll. 64-66 where it states that the sensing and counter electrodes preferably have a thickness of 0.1 mm. This preferred dimension exceeds the range of 50-10,000 Å for an electrode thickness by a factor of 100-20,000. In the originally filed disclosure, the independent claims defined the sensing and counter electrodes generically and would have read on either the electrodes of fig. 6 or 7. However, during prosecution, the electrode embodiment of fig. 6 was surrendered when applicant amended the independent claims to require the inclusion of proton conductive material to the electrode. Claims 6-8, 18 58-60, 83-85, 95 and 118-120 should thereby be cancelled in response to this office action.

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claims 1, 5, 9, 11, 12, 29-34, 52, 53, 57, 61, 63, 64, 67, 71, 73, 75, 77, 78, 82, 86, 88, 89, 106-113, 117, 121, 123, 124, 126, and 127 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dempsey (USP 4,227,984) in view of Uchida (USP 5,474,857), Grot (5,330,860), and/or Vanderborgh et al (USP 4,804,592).

12. With respect to claim 1, Dempsey discloses an electrochemical gas sensor comprising a sensing electrode 13 and a counter electrode 10 both of which are permeable to water vapor and are inherently comprised of electrically conducting material (col. 4, lines 30-64). Dempsey further discloses a first protonic conductive electrolyte membrane 9 permeable to water and situated between and in contact with the sensing and counter electrodes (fig. 2, and col. 4, lines

49-51), and also discloses a means for electrical measurement electrically connecting the sensing and counter electrodes (fig. 3). Dempsey further discloses a means, containing a volume of water (1, 2), for exposing the counter electrode to water vapor (col. 4, lines 39-49). Dempsey does not explicitly disclose the use of sensing and/or counter electrodes having the set forth composition of electron conductive mixed material and proton conducting material, Dempsey did recognize that electrodes set forth in the fuel cell prior art would find utility for the sensor of Dempsey (col. 8, lines 30-63). Uchida teaches a particular electrode for use in fuel cells that comprises a combination of proton conducting material (i.e. Nafion) and carbon and platinum materials (col. 7, line 55 through col. 8, line 26) that satisfies the claimed percentages (see Reexamination 90/006,209 Request dated 1/29/2002, pp. 4 and 5). Grot also teaches the use of fuel cell electrodes having the claimed compositions (col. 4, line 35 through col. 5, line 2; and col. 14, lines 15-27). Vanderborgh also teaches the incorporation of electrolyte material (polyperfluorosulfonic acid (PFSA)) into the electrode material into the electrode to increase the three phase interface and reduce the electrode resistance. See col. 2, ll. 37-43. Vanderborgh further teaches that such as electrode should includes first and second electrical conductors (C and Pt) that is 82 wt% where the proton conducting material PFSA is 18 wt%. See Table 1 in col. 8. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of any of Uchida, Grot, and/or Vanderborgh for the sensor of Dempsey because these electrodes have shown previous favorable utility in the fuel cell art, and the substitution of one known fuel cell electrode composition for another, when the results are not unexpected, requires only routine skill in the art. Furthermore, the addition of an ionically conductive polymer to the electrodes of Dempsey would improve the electrical

properties (e.g. decrease the effective electrode resistance (col. 2, ll. 42 and 43 of Vanderborgh or col. 4, lines 26-29 of Grot). Although Vanderborgh, Uchida and Grot are drawn principally towards fuel cell power sources, both Uchida and Grot recognized the utility of their teachings to include fuel cell sensors like those of Dempsey (see Uchida, col. 10, lines 60-64; and Grot, col. 1, lines 19-30). In addition, Dempsey recognized the utility of teachings from the general fuel cell art for the disclosed sensor (col. 8, lines 30-63).

13. With respect to claim 5, Figure 1 of Dempsey shows opposing surfaces where each surface has a sensing and counter electrode respectively. Moreover, fig. 1 also shows the working and counter electrodes embedded into the electrolyte membrane resulting in a nonplanar portion of the membrane at the point of the embedding. See fig. 1. This would read on the claimed "substantially nonplanar" membrane giving the claim language its broadest reasonable interpretation.

14. With respect to claims 9 and 11, see Dempsey col. 6, l. 66 - col. 7, l. 16.

15. With respect to claim 12, all of Uchida, Grot, and Vanderborgh taught the use of a combination of carbon and Pt with Pt and C in the claimed ratios. See Uchida, col 7, ll. 59-62; see Grot, col. 14, ll. 15-27; see Vanderborgh, Table 1. Moreover, Vanderborgh explicitly taught the use of carbon black as the preferred source of carbon for the electrodes as it provides a high surface area. See col. 8, ll. 16-28. Hence, it would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize carbon black as the source of carbon for the electrodes of Uchida and Grot as well as carbon black provides a high surface area support that would maximize the utility of the highly expensive Pt metals.

16. With respect to claims 29-34 and the use of the sensor for CO, alcohol, or NOx, see the Dempsey abstract. With respect to the use of the sensor with the gases hydrogen, H2S, and H2O, that is only the intended use of the apparatus and the intended use need not be given further due consideration in determining patentability. The examiner would note that the applicant gave no other electrode compositions for the detection of hydrogen, H2S or H2O, indicating that the electrodes already set forth for the CO sensor would also be applicable for the other claimed compositions.

17. With respect to claims 52, 57, 61, 63 and 64 (those limitations not covered above) Dempsey also teaches the use of a reference electrode for the sensor (col. 4, lines 60-65) as well as a reservoir 1 containing both water and water vapor which would expose the counter electrode to both water and water vapor (col. 4, ll. 30-34).

18. With respect to claims 53 and 113, Dempsey teaches a means for applying DC potential across the sensing and counter electrodes. See col. 2, l. 36 - col. 3, l. 38. Although Dempsey does not disclose this DC potential as being for the purpose of transporting gas away from the counter electrode, it would clearly be capable of providing said function.

19. With respect to claim 67, 73, and 75 (those limitations not covered above), because the electrode of Dempsey in view of Uchida, and/or Grot already rendered obvious the combination of catalytic electronic conducting material (e.g. Pt) and ion conducting material (e.g. Nafion) for the electrodes with overlapping composition to the electrodes of the instant invention, then such an electrode would inherently be capable of reacting with a gas in the absence of an applied or biased voltage to the sensing electrode. The fact that Dempsey operates its sensor using an applied voltage to the sensing electrode does not read free of this limitation because whether or

not a voltage is applied is how the sensor is to be utilized and does not further define the structure of the device.

20. With respect to claims 71 and 77 (those limitations not covered above), the sensing and counter electrodes of Dempsey are on opposite sides of the first protonic conductive electrolyte membrane. See fig. 1 and 3.

21. With respect to claims 78, 82, 86, 88, 89, and 106-111 (those limitations not covered above), whether or not the sensor is operated at room temperature is only the intended use of the apparatus and the intended use need not be given further due consideration in determining patentability. It is noted however that the sensor of Dempsey can be utilized at room temperature as evidenced by col. 2, ll. 30-35. Furthermore, the means for electrical measurement of Dempsey is capable of detecting a change in electrical characteristic (i.e. current) in response to a positive ambient atmosphere concentration. See col. 11, ll. 8-30.

22. With respect to claims 112, 117, 121, 123, and 124 (those limitations not covered above), whether or not the sensor is operated at room temperature is only the intended use of the apparatus and the intended use need not be given further due consideration in determining patentability. It is noted however that the sensor of Dempsey can be utilized at room temperature as evidenced by col. 2, ll. 30-35.

23. With respect to claims 126 and 127 (those limitations not covered above), whether or not the sensor is operated as a residential gas sensor merely constitutes the intended use of the sensor and the intended use need not be given further due consideration in determining patentability.

24. Claims 2, 54, 79, and 114 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dempsey in view of Grot, Uchida, and/or Vanderborgh as applied to claims 1, 52, 78, and 112 above, and further in view of La Conti et al (USP 4,820,386).

25. The references set forth all the limitations of the claims, but did not explicitly recite the presence of antifreeze. La Conti teaches adding materials such as glycols (a well known antifreeze) to the water to increase the effective temperature range for the sensor (col. 11, lines 42-49). It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teachings of La Conti for the sensor of Dempsey in view of Grot, Uchida, or Vanderborgh in order to increase the temperature range of the sensor.

26. Claims 3, 55, 80, and 115 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dempsey in view of Grot, Uchida, and/or Vanderborgh as applied to claims 1, 52, 78, and 112 above, and further in view of Hielscher et al (USP 5,403,452).

27. The references set forth all the limitations of the claims, but did not explicitly recite that the surface area of the sensing electrode is smaller than the surface area of the counter electrode. Hielscher teaches in an alternate gas sensor that the counter electrode 2 should be larger than sensing electrode 1 (fig. 4 for example) so that the counter electrode's current density is less than the measuring electrode's current density. See col. 8, ll. 38-44. This is in accordance with the point the examiner made previously from Reexamination 90/006,209 (see p. 19 of the 7/17/2003 Examiner's Answer) in that it was known to make the counter electrode larger than the sensing electrode so that the counter electrode does not diffusion limit the sensor response. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Hielscher and make the sensing electrode smaller than the counter

electrode for the sensor of Dempsey and Uchida, Grot, and/or Vanderborgh in order to ensure that the counter electrode's current density is less than the current density at the working electrode thereby ensuring that the sensing electrode is the diffusion limiting electrode.

28. With respect to the remainder of claims, because the counter electrode of Dempsey is directly exposed to water vapor, the humidity would presumably be at or near 100%. Because the humidity at the counter electrode is greater than the humidity at the sensing electrode, a positive pressure of water vapor would be result.

29. Claims 4, 56, 81, and 116 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dempsey and Hielscher in view of Grot, Uchida, and/or Vanderborgh as applied to claims 3, 55, 80, and 115above, and further in view of La Conti et al.

30. The reference set forth all the limitations of the claims, but did not explicitly recite the use of a hydrophobic membrane separating the counter electrode from the water vapor. La Conti teaches that the placement of a water transport film between an electrode and a source of water vapor allows impure water sources to be utilized (such as the antifreeze taught above) (col. 11, lines 42-49). The water transport film used by La Conti is a hydrophobic polytetrafluoroethylene (col. 3, lines 62 and 63). It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of La Conti for the sensor of Dempsey, Hielscher, and Grot, Uchida, and/or Vanderborgh in order to prevent contamination of the counter electrode.

31. Claims 10, 62, 66, 70, 72, 74, 76, 87, and 122 (and claims 67, 73, and 75 in the alternative) are rejected under 35 U.S.C. 103(a) as being unpatentable over Dempsey in view of

Grot, Uchida, and/or Vanderborgh as applied to claims 1, 52, 78, and 112 above, and further in view of Tomantschger et al (USP 5,302,274).

32. With respect to claims 10, 62, 87, and 122, the references set forth all the limitations of the claims, but did not explicitly recite the use of a hydrated metal oxide protonic conductor electrolyte. Tomantschger teaches in an alternate gas sensor a number of different electrolyte materials useable for gas sensors including a uranyl hydrogen phosphate tetrahydrate (col. 8, lines 37 and 38). It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Tomantschger for the sensor of Dempsey in view of Grot, Uchida, and/or Vanderborgh because the substitution of one known electrolyte means for another, when the results are not unexpected, requires only routine skill in the art.

33. With respect to claims 66, 70, 72, 74, and 76 (those limitations not already discussed above), the references do not teach that the sensing and counter electrodes are the only two electrodes in contact with the electrolyte membrane. Rather, Dempsey teaches the presence of an additional reference electrode. However, Tomantschger teaches that it is unnecessary to have three electrodes for the gas sensor as only two are necessary for appropriate sensor operation. In particular, Tomantschger teaches that the gas sensor can comprise only a sensing and counter electrode where the presence of the gas being analyzed is determined based on an induced sensor response. See fig. 8 and 9; col. 9, ll. 1-19; and col. 10, ll. 10-20. Because this configuration of sensor reduces the number of electrodes and reduces the need for an applied potential across the sensor, it would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the sensor configuration of Tomantschger for the sensor of Dempsey

in view of Uchida, Grot, and/or Vanderborgh in order to simplify the sensor construction and operation.

34. With respect to claims 67, 73, and 75 in the alternative, these claims were rejected earlier because the claim language drawn to operating the sensors in a non-biased manner or without applied voltage did not further define the actual structure of the sensor. However, even if these terms were to be interpreted as structurally further defining the claimed sensor, then these claims would be obvious over the further teaching of Tomantschger for the reasons set forth for claims 66, 70, 72, 74, and 76 above.

35. Claims 66, 70, 72, 74, and 76 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dempsey in view of Grot, Uchida, and/or Vanderborgh as applied to claims 1, 52, 78, and 112 above, and further in view of Nagata et al (USP 4,913,792).

36. The references set forth all the limitations of the claims, but did not teach that the sensing and counter electrodes are the only two electrodes in contact with the electrolyte membrane. Rather, Dempsey teaches the presence of an additional reference electrode. Nagata teaches an alternate gas sensor having three electrodes equivalent to the three electrodes of Dempsey (i.e. a sensing (or working) 2, a counter electrode 4, and a reference electrode 3). However, Nagata teaches that the sensor could be constructed without the presence of a reference electrode provided one is willing to utilize a suitably large counter electrode. Nagata further teaches that such a configuration would simplify sensor construction. See col. 7, l. 66 - col. 8, l. 11. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of a two-electrode sensor configuration of Nagata for the sensor of Dempsey in view of Uchida, Grot, and/or Vanderborgh in order to simplify the sensor construction.

***Allowable Subject Matter***

37. Claims 13-17, 19-28, and 65 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

38. Claims 35-51 are allowed.

39. The following is a statement of reasons for the indication of allowable subject matter: With respect to claims 13 and 65, the prior art does not disclose nor render obvious all the cumulative limitations of these claims and any claims they thereby depend from, with particular attention to the combination of carbon black and Ru oxide. With respect to claims 14, 23, and 35, the prior art does not disclose nor render obvious all the cumulative limitations of the claims and any claims they thereby depend from, with particular attention to the set forth pumping electrodes. Claims 15-17, 19-28 and 36-51 depend from these otherwise allowable claims.

***Response to Supplemental Declaration***

40. Applicant has filed a subsequent declaration of commercial success on 6/04/2007 in the 90/006,209 application presumably in an attempt to overcome the deficiencies pointed on the in the Board decision (p. 30 of the 3/28/2007 decision). In particular, applicant urges in item 6 of the declaration that the commercial success stems from a number of technical properties a-h of the present invention. However, this declaration still does not clearly establish a nexus between the claimed invention and the commercial success. Moreover, some of the points the applicant makes in the declaration appear to be contradicted by the both the claimed invention and the

prior art of record. In particular, items a-d, f, and h do not appear to be drawn to any particular feature of the claimed invention. Applicant has not explained how any of these features explicitly stems from the claimed invention. Moreover these items a-d, f, and h are broadly defined and would appear to read on the prior art such as Dempsey. Dempsey did not state that they had any problem with ionic resistance, response time, current strength, recalibration, stability, or polarization problems. Item e was already old in the art as evidenced by both Dempsey and Tomantschger. Item g concerns the elimination of the need for a reference electrode. However, the instant invention even claims the presence of a reference electrode (see claims 52 and 112 for example). Furthermore, very few of applicant's claims read on the absence of a reference electrode and none of the claims read away from the use of a DC potential to drive the sensor response. Moreover, both Nagata and Tomantschger teach that a reference electrode was not a requirement for effective gas sensing and Tomantschger taught that an amplifier was not necessary for monitoring the sensor response (see the rejections above).

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KAJ K. OLSEN whose telephone number is (571)272-1344. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kaj K Olsen/
Primary Examiner, Art Unit 1795
May 27, 2008